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1977

Ecological survey of the vegetation of the proposed  
Peavine Research Natural Area,  
El Dorado National Forest, California

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Two minor streams flow through the area, draining the slope of Peavine Ridge. Soldier Creek flows year-round for approximately 2 km through the area. A smaller, intermittent stream begins in Section 18, and flows probably only in the rainy season.

Regional Climate. The west slope of the Sierra Nevada in the vicinity of the proposed Peavine RNA receives moderately heavy winter precipitation in the form of rain and snow. Annual precipitation in the area is in the 700 to 1300 mm range, slope exposure being an important determinant of moisture availability. No recording weather stations occur within the proposed RNA, but the total precipitation at Pacific House, at 1094 m elevation on the opposite rim of the American River canyon 4 km upstream, averages 1300 mm.

In Table 1 a mean monthly water balance is given for nearby Placerville, an area with similar vegetation and probably similar climate. Drought (stippled area in the figure below Table 1) is moderately intense in the summer months, indicating the summer-dry climate.

Winter snowfall is probably frequent in the proposed RNA, but snow cover probably does not remain on the ground for more than a few days, and snowfall totals are likely low. The abundance of Quercus chrysolepis in the proposed RNA is indicative of light snowpacks, since it is susceptible to heavy snowfall, losing limbs to breakage under heavy loads.

Geology and Soils. The proposed RNA is underlain entirely by granodiorite. Tertiary volcanic rocks (Pliocene pyroclastics) cap Peavine Ridge above and directly north of the area. Paleozoic marine formations, highly metamorphosed, occur in the west and in the canyon of Silver Creek.

On 10 of these 22 plots, we sampled the trees for density and basal area within circular areas of 12 to 20 m radius. In addition, the senior author of this report revisited the site on several occasions during the summer of 1976 to make additions to the species list.

Plant Associations. The data collected from the 22 sample plots were subjected to an association analysis technique, to identify groups of species which occur together under similar habitat conditions. This procedure ordered the species by plot data matrix, resulting in the array shown in Table 2.

From Table 2, and from other work by the senior author of this report conducted in the immediate vicinity of the proposed Peavine RNA, the following four plant associations are recognized in the vicinity:

- A. Alnus rhombifolia-Peltiphyllum peltatum association
  - B. Pseudotsuga menziesii-Cornus nuttallii association
  - C. Pinus ponderosa-Chamaebatia foliolosa association
  - D. Quercus chrysolepis-Arctostaphylos mewukka association
- A. Alnus rhombifolia-Peltiphyllum peltatum association.

This vegetation is limited to the major watercourses on the west slope of the Sierra. Generally, it is restricted to riparian areas below the mean high-water level. Alnus rhombifolia reaches 40 to 50 cm DBH, and 15 m in height. The major conifers within the area can be found scattered in this habitat in favorable localities. Peltiphyllum peltatum is a conspicuous herbaceous perennial to 1 m tall with leaves up to 0.3 m<sup>2</sup> in area, which grows in cobbly river gravels usually inundated throughout

main component. Basal area on the sampled plots averaged  $69.3 \text{ m}^2/\text{ha}$ , with Pinus ponderosa comprising 78 percent of this value. Basal areas for Pinus ponderosa ranged from 14 to  $96 \text{ m}^2/\text{ha}$ , with densities of 56 to 309 stems/ha. Table 3 gives the data from these 10 forest plots.

Individuals of Pinus ponderosa are typically large, and stands are often quite open, yet with high basal area. The mean DBH for Pinus ponderosa on the sampled plots was 59.2 cm.

Chamaebatia foliolosa is a low (.2 to .4 m), flexuous, aromatic shrub, and is important as an understory component in this community. Its cover is often near 100 percent, although it can be absent or rare in some stands. Ceanothus integerrimus and Rhus diversiloba are also important understory shrubs in this type. Other constant species for this association are given in Table 2. Stands 5 through 2 (left to right) in Table 2 typify this association.

D. Quercus chrysolepis-Arctostaphylos mewukka association.

This community is limited to rocky sites within the immediate vicinity of the proposed RNA, occurring on granitic out-crops where soil development is minimal. We sampled only one stand (11) of this type in the area, but the senior author has sampled other stands of this vegetation in the canyon of the South Fork of the American River.

Quercus chrysolepis is important, often forming a partially closed canopy. Arctostaphylos mewukka is important only where the stand is open, and the density of Quercus chrysolepis is low.

The area officially designated as a RNA should include the free flowing bed of the American River, and future consideration might be given to extending the southern boundary of the area to include the opposite wall of the canyon of the American River, which supports old-growth Douglas-fir Forest (SAF-244) with extremely high basal area and site index.

#### SPECIES LIST

A total of 153 taxa of vascular plants were observed on the proposed RNA and the immediate vicinity. None of these taxa are rare or endangered, according to the Smithsonian, California Native Plant Society, and U.S. Fish and Wildlife Service lists.

11. CAMPANULACEAE

- 17 Campanula prenanthoides 1063

12. CAPRIFOLIACEAE

- 18 Lonicera interrupta 1051  
19 Symphoricarpos acutus 1049

13. COMPOSITAE

- 20 Achillea lanulosa 1229  
21 Adenocaulon bicolor 1239  
22 Agoseris grandiflora 1293  
23 Anaphalis margaritacea 1263  
24 Artemisia dracunculus 1237  
25 A. ludoviciana 1236  
26 Aster radulinus 1197  
27 Erigeron inornatus var. inornatus 1219  
28 Eriophyllum lanatum (var.?) 1146  
29 Helianthella californica var. nevadensis 1191  
30 Hieracium albiflorum 1305  
31 Lessingia nemaclada 1222  
32 Madia elegans 1115  
33 Senecio integerriums var. major 1248  
34 Tragopogon dubius 1301

14. CONVOLVULACEAE

- 35 Convolvulus polymorphus 462

15. CORNACEAE

- 36 Cornus nuttallii 1035  
37 C. sessilis 1035  
38 C. stolonifera 1034

16. CRASSULACEAE

- 39 Dudleya cymosa 722

17. CRUCIFERAE

- 40 Athysanus pusillus 253

18. CUCURBITACEAE

- 41 Marah fabaceus 1059

27. HYDROPHYLLACEAE

68 Phacelia heterophylla 533

28. HYPERICACEAE

69 Hypericum perforatum 192

29. IRIDACEAE

70 Iris hartwegii 1389

30. JUNCACEAE

71 Juncus effusus var. pacificus 1404

72 J. ensifolius 1412

73 Luzula comosa 1413

31. LABIATAE

74 Monardella odoratissima ssp. glauca 714

75 Prunella vulgaris ssp. lanceolata 697

32. LEGUMINOSAE

76 Lotus crassifolius 844

77 L. grandiflorus 845

78 L. nevadensis 848

79 L. purshianus 847

80 Lupinus grayi 822

81 L. latifolius 827

82 Lathyrus nevadensis 893

83 L. sulphureus 893

84 Trifolium tridentatum 841

33. LILIACEAE

85 Calochortus albus 1346

86 Chlorogalum pomeridianum 1329

87 Disporum hookeri var. trachyandrum 1332

88 Fritillaria micrantha 1340

89 Lilium humboldtii 1343

90 L. pardalinum 1344

91 Smilicina racemosa var. amplexicaulis 1331

92 Trillium chloropetalum 1335

34. LIMNANTHACEAE

93 Limnanthes alba 149

45. PYROLACEAE

116	<i>Pterospora andromedea</i>	436
117	<i>Pyrola picta</i> f. <i>aphylla</i>	434

46. RANUNCULACEAE

118	<i>Aquilegia formosa</i> var. <i>truncata</i>	105
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47. RHAMNACEAE

119	<i>Ceanothus cordulatus</i>	978
120	<i>C. integerrimus</i>	977
121	<i>Rhamnus rubra</i> ssp. <i>obtusissima</i>	973

48. ROSACEAE

122	<i>Amelanchier pallida</i>	793
123	<i>Chamaebatia foliolosa</i>	781
124	<i>Potentilla glandulosa</i> ssp. <i>reflexa</i>	775
125	<i>P. gracilis</i> ssp. <i>nuttallii</i>	773
126	<i>Prunus subcordata</i>	789
127	<i>Rosa gymnocarpa</i>	788
128	<i>Rubus parviflorus</i>	785
129	<i>R. leucodermis</i>	785

49. RUBIACEAE

130	<i>Galium bolanderi</i>	1042
131	<i>G. triflorum</i>	1040

50. SALICACEAE

132	<i>Populus trichocarpa</i>	910
133	<i>Salix lasiolepis</i>	915
134	<i>S. melanopsis</i>	914

51. SANTALACEAE

135	<i>Comandra pallida</i>	988
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52. SAXIFRAGACEAE

136	<i>Boykinia elata</i>	732
137	<i>Heuchera micrantha</i> var. <i>erubescens</i>	742
138	<i>Peltiphyllum peltatum</i>	733



Placerville, California; Mean Monthly Water Balance

(Based on Thornthwaite 1948; Ann. Assoc. Amer. Geogr.)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Temp	4.9	6.7	8.6	11.4	14.8	19.1	22.7	21.4	18.2	13.5	8.6	5.4	12.9 °C
PET	11	17	29	46	75	107	139	120	84	51	24	12	715 mm
Ppt	197	171	169	92	47	14	1	1	15	53	108	172	1040 mm
SStg	100	100	100	100	75	29	7	2	1	3	88	100	mm
AET	11	17	29	46	72	60	23	5	16	51	24	12	365 mm
Def					3	47	117	114	68				349 mm
Surp	186	155	140	46						0	0	148	674 mm

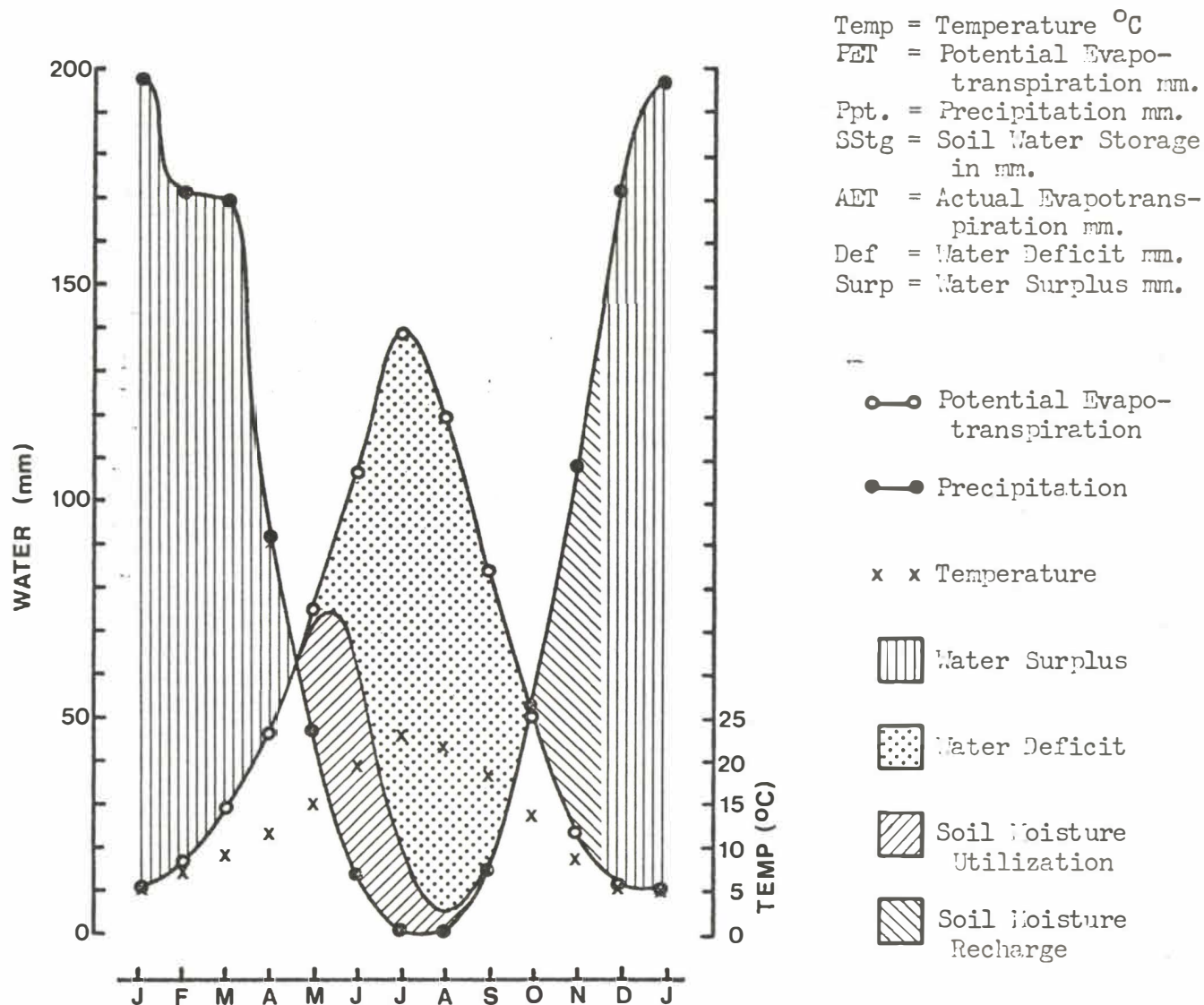
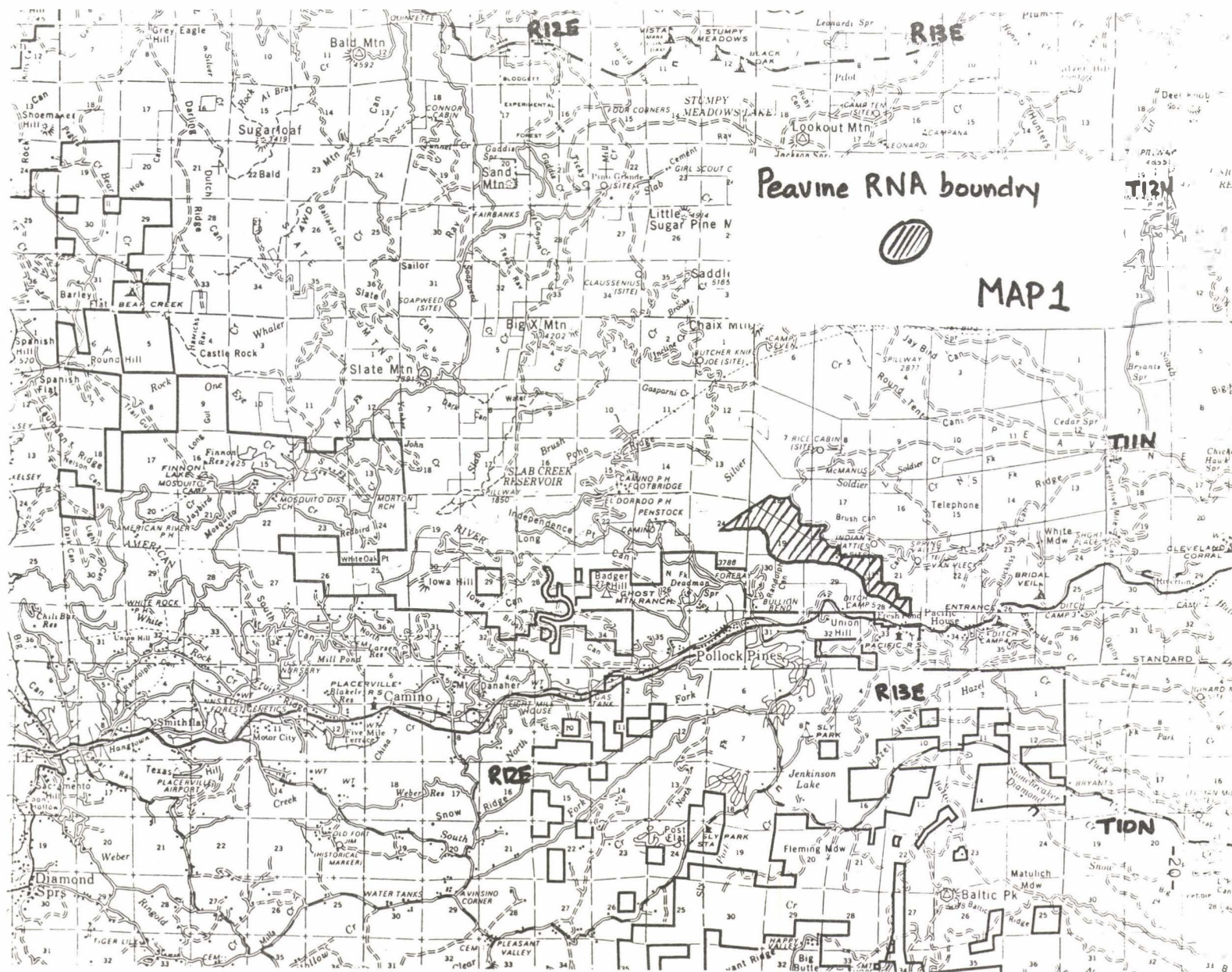


Table 3.

Tree density and dominance data for 10 stands of *Pinus ponderosa*-*Chamaebatia foliolosa* vegetation on the proposed Peavine Research Natural Area, El Dorado National Forest, El Dorado County, California.

Species	PLOT NUMBER										GRAND MEAN
	04	07	14	15	16	17	18	19	20	21	
A. Basal Area (m <sup>2</sup> ha <sup>-1</sup> )											
Pinus ponderosa	56.5	39.9	62.6	62.5	49.0	77.3	87.4	14.7	96.8	26.9	57.8
Quercus kelloggii	12.2	18.7	24.6	23.9	2.4	19.1	-	13.2	-	-	11.4
Quercus chrysolepis	-	-	.002	-	.00	.09	-	-	-	-	.016
Abies concolor	-	-	1.6	-	-	-	-	-	-	-	.016
Torreya californica	-	-	0.2	-	-	-	-	-	-	-	.002
TOTALS	68.8	58.7	88.9	86.4	51.5	96.5	87.5	27.9	96.8	26.1	63.9
B. Density (stems ha <sup>-1</sup> )											
Pinus ponderosa	56.8	183.	110.5	268.	127.	183.	169.	143.	309.	135.2	168.7
Quercus kelloggii	28.2	47.7	66.3	56.5	28.2	127.	28.9	103.	88.4	-	57.4
Quercus chrysolepis	-	-	44.2	-	14.1	28.2	-	-	-	-	8.6
Abies concolor	-	-	22.1	-	-	-	-	-	-	-	2.2
Torreya californica	-	-	22.1	-	-	-	-	-	-	-	2.1
TOTALS	84.8	230.	265.	325.3	169.	339.	198.	246.	397.	135.2	239.2
C. Mean Stem Diameter (cm ± Coef. Variation %)											
Pinus ponderosa	109 ±26%	34.0 ±121%	62.9 ±94%	41.3 ±88%	64.4 ±42%	67.4 ±49%	76.2 ±37%	27.5 ±89%	58.4 ±42%	50.2 ±38%	59.2 ±64%
Quercus kelloggii	73.6 ±19%	67.3 ±35%	68.5 ±11%	73.0 ±11%	33.0 ±11%	42.8 ±20%	-	40.7 ±46%	-	-	39.9 ±82.7

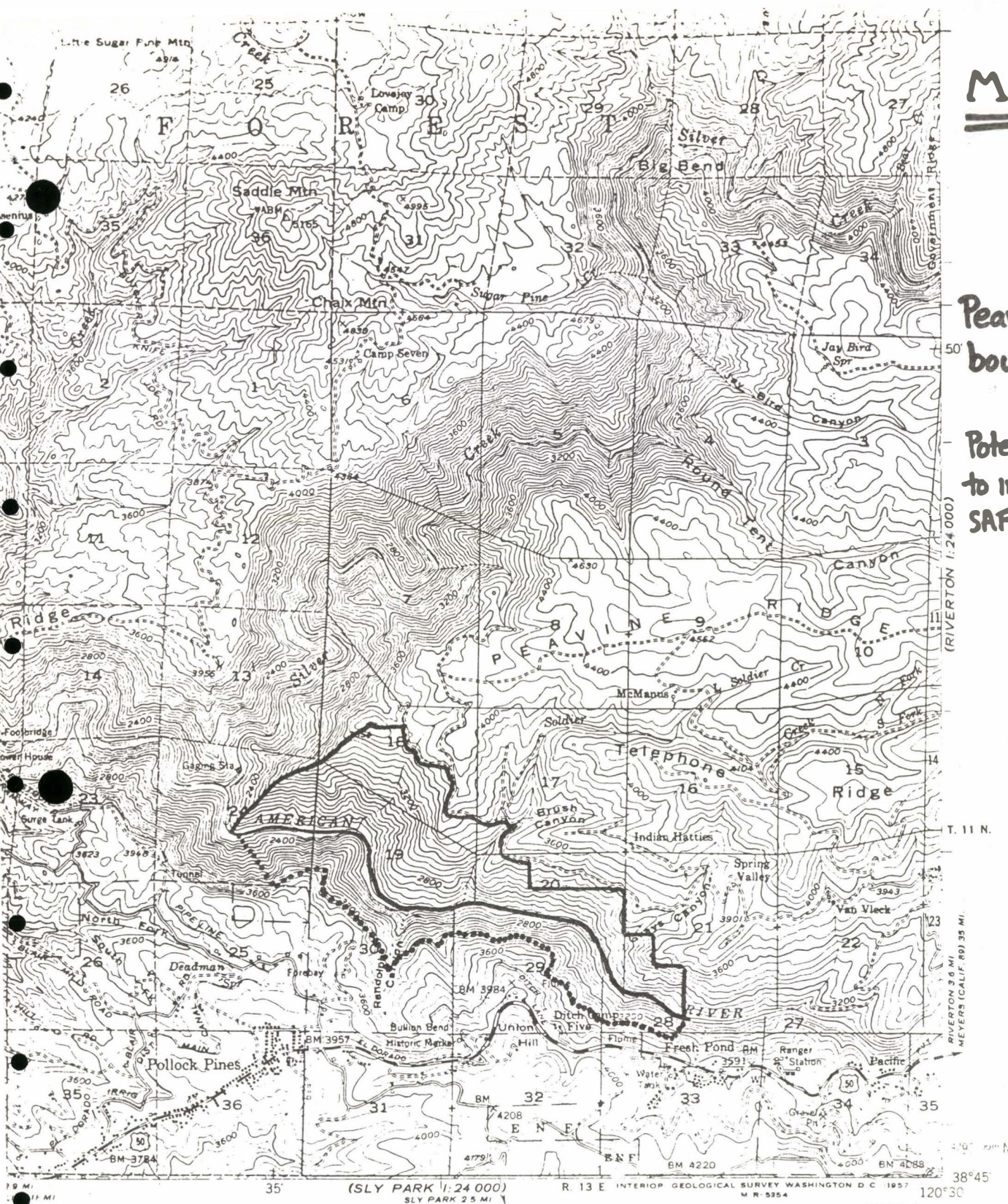




# MAP 2

Peavine RNA  
boundary —

Potential extension  
to include  
SAF-244 .....



## ROAD CLASSIFICATION

Heavy dut. ——— 4 LANE 6 LANE Light dut. ———  
Medium dut. ——— 4 LANE 6 LANE Unimproved dut. ———  
U S Route ——— State Route ———

This area is also covered by 1:24,000 scale maps of  
Devil Peak Tunnel H.I., State Mtn. and the Saddle Mtn.  
7.5 minute quadrangles surveyed in 1945.

SADDLE MOUNTAIN CALIF  
N 3845-W 11111

1950



-22-


$$\begin{cases} C \\ Aps \\ Gr \end{cases}$$



Figure 1. Open Pinus ponderosa stand of moderate basal area on the Peavine area. Charred log and moderately dense Ceanothus integerrimus are indicative of recent fire.



Figure 2. Open, old growth stand of Pinus ponderosa on Peavine area. Chamaebatia dominates the ground layer here.





Figure 3. Rock outcrops of the Quercus chrysolepis-Arctostaphylos mewukka community on the Peavine area. Ledges where sand and soil accumulate support a diverse vernal flora.



Figure 4. South Fork of the American River within the boundaries of the Peavine area. Riparian trees are mostly Alnus rhombifolia. Riverbed typifies the Alnus rhombifolia-Peltiphyllum peltatum community.